CLAIMS

What is claimed is:

1. An apparatus for cleaning and shaping a probe tip comprising:
   a support structure having a surface; and
   a pad formed on said surface of said support structure, wherein said pad comprises an adhesive and a plurality of abrasive particles in contact with said adhesive.

2. The apparatus of claim 1 wherein said adhesive is located in an adhesive layer.

3. The apparatus of claim 1 wherein said plurality of abrasive particles is located in an abrasive layer.

4. The apparatus of claim 1 wherein said adhesive is located in an adhesive layer and wherein said plurality of abrasive particles is located in an abrasive layer.

5. The apparatus of claim 4 wherein said pad further comprises a plurality of alternating layers of said adhesive layer and said abrasive layer.

6. The apparatus of claim 5 wherein at least one of said abrasive layers comprises abrasive particles of a different size than the abrasive particles of another abrasive layer.

7. The apparatus of claim 6 wherein the size of the abrasive particles increases for each abrasive layer that is further from the support structure.

8. The apparatus of claim 1 further comprising a composite layer comprising said adhesive and said plurality of abrasive particles.

9. The apparatus of claim 8 further comprising a plurality of said composite layers.

10. The apparatus of claim 9 wherein at least one of said composite layers comprises abrasive particles of a different size than the abrasive particles of another composite layer.

11. The apparatus of claim 10 wherein the size of said abrasive particles increases for each composite layer that is further from the support structure.

12. The apparatus of claim 9 wherein at least one of said composite layers comprises abrasive particles of a different material than the abrasive particles of another composite layer.

13. The apparatus of claim 1 wherein the size of the abrasive particles is between 0.01 microns and 90 microns.

14. The apparatus of claim 1 wherein the support structure is a semiconductor wafer, wherein the adhesive is an acrylic adhesive, and wherein the abrasive particles are diamond particles.

15. A method for cleaning and shaping a probe tip comprising the steps of:

inserting the probe tip into a multi-layered adhesive and abrasive particle pad; and

extracting the probe tip.

16. The method of claim 15 wherein the step of inserting the probe tip comprises inserting the probe tip a predetermined distance into the pad, wherein said predetermined distance is a function of tip length and pad thickness.

17. The method of claim 15 wherein the steps of inserting and extracting are performed on-line.

18. The method of claim 15 wherein in the inserting step said multi-layer adhesive and abrasive pad comprises abrasive layers, wherein at least one of said abrasive layers has abrasive particles having a different size than the abrasive particles of at least one other abrasive layer.

19. The method of claim 15 wherein in the inserting step, said multi-layer adhesive and abrasive pad comprises a plurality of composite layers, wherein at least one of said composite layers has abrasive particles having a different size than the abrasive particles of at least one other composite layer.

20. A method of making a probe tip cleaning and shaping pad comprising the steps of:

applying an adhesive layer to a support structure, and

applying a plurality of abrasive particles to said adhesive layer to form an abrasive particle layer.

21. The method of claim 20 further comprising the steps of:

heating the support structure,

wherein the step of applying an adhesive layer further comprises rolling the adhesive layer with a rolling tool to remove air bubbles; and

wherein the step of applying the plurality of abrasive particles comprises brushing the plurality of abrasive particles on to said adhesive layer.

22. The method of claim 20 further comprising the steps of:

heating the support structure,

wherein the step of applying an adhesive layer further comprises placing the adhesive layer on the support structure and rolling over the adhesive layer with a rolling tool to remove air bubbles; and

wherein the step of applying the plurality of abrasive particles comprises brushing the plurality of abrasive particles on to said adhesive layer.

23. The method of claim 21 wherein in the step of applying the plurality of abrasive particles, said plurality of abrasive particles comprises varying grit sizes for different layers; and wherein said abrasive particles comprise diamond particles.

24. The method of claim 23 wherein the step of applying the plurality of abrasive particles further comprises graduating the size of the abrasive particles from smallest to largest with increasing distance of layers from the support structure.

25. The method of claim 24 wherein the step of applying the adhesive layer further comprises using an adhesive backing layer that can be peeled off, leaving the adhesive behind.